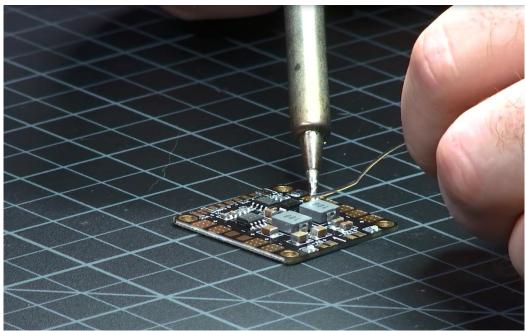
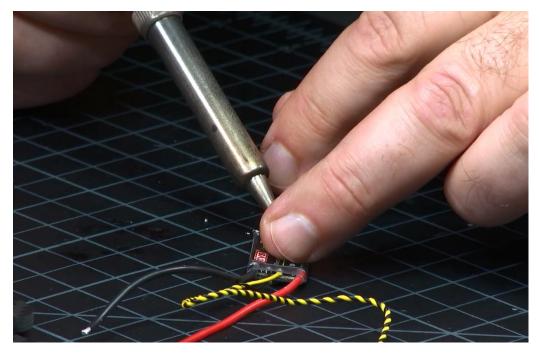
Building a Drone Lesson Summary

Motors, ESCs and PDB

Preparing the pads on the power distribution board:



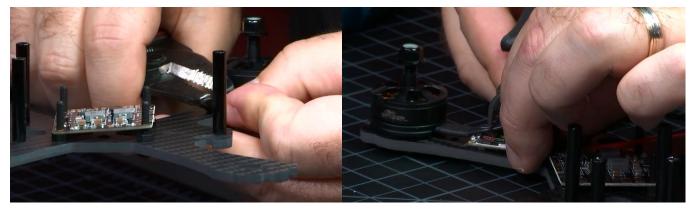
Use a soldering iron add solder to each one of the pads.



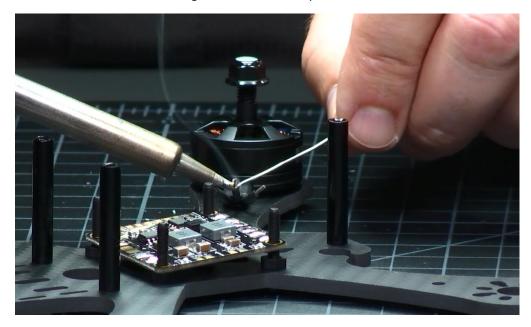
Remove wires from the electronic speed controllers if there are any by using the soldering iron and melting the wire off.



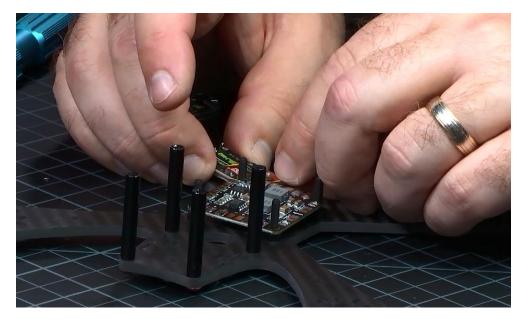
Mount the motor to the frame



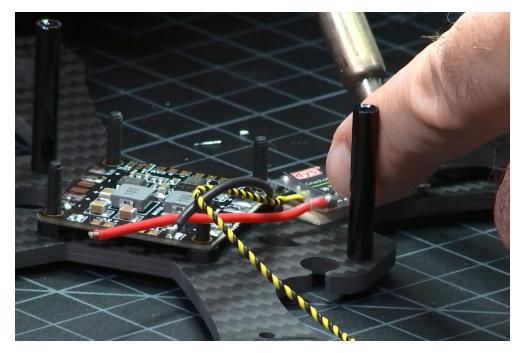
Trim motor wires for attaching to the electronic speed controller.



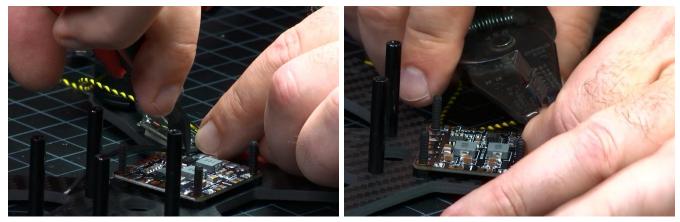
Add solder to the motor wires.



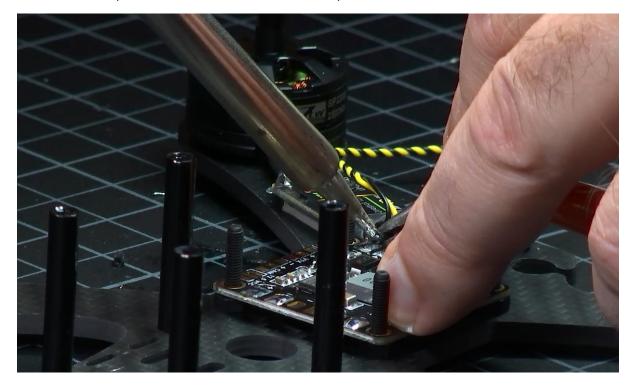
Stick electronic speed controller down with double sided tape.



Attach the wire to the pad using the soldering iron.

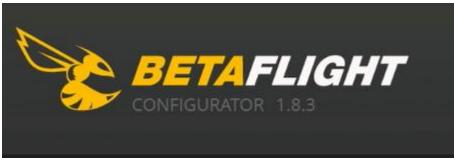


Trim electronic speed controller wire to attach to the power distribution board.

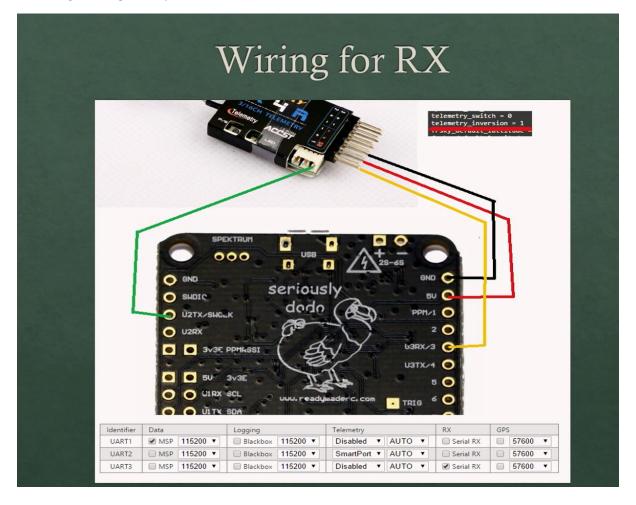


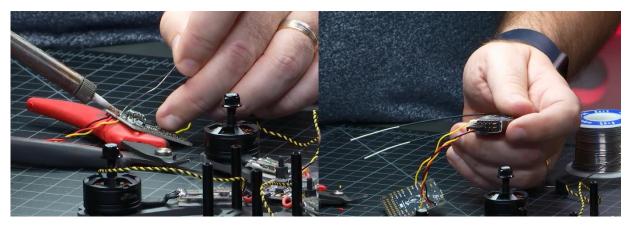
Attach wire to power distribution board using soldering iron.

Connecting Up Flight Controller

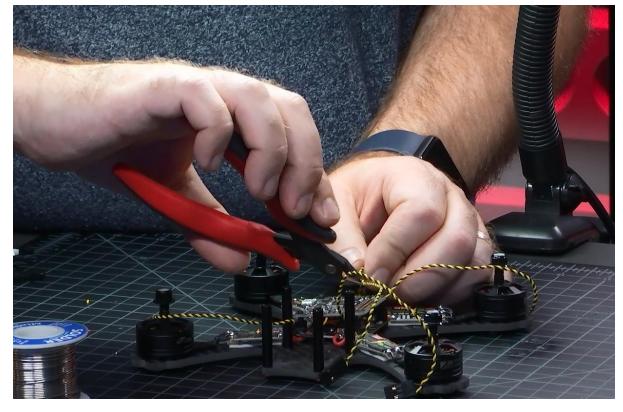


Update the flight computer/controller to the latest firmware by connecting it to a computer via USB and using **Betaflight** to update to the latest firmware.



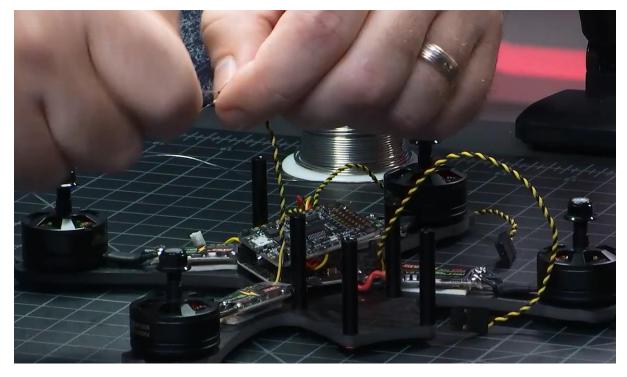


Wiring the transmitter to the dodo board/flight controller. The transmitter transmits signals to tell the flight controller what to do by using the receiver.

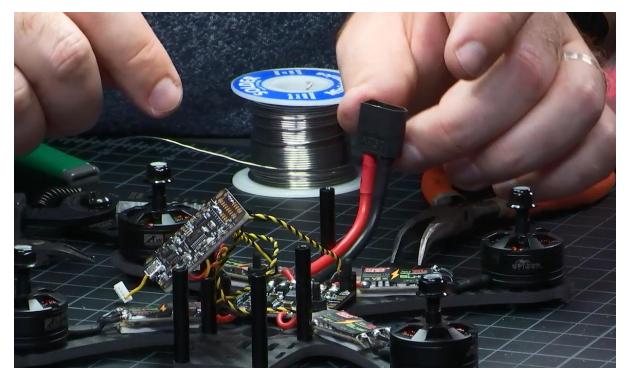


Configure the features you want on your copter using Betaflight. Set up the receiver.

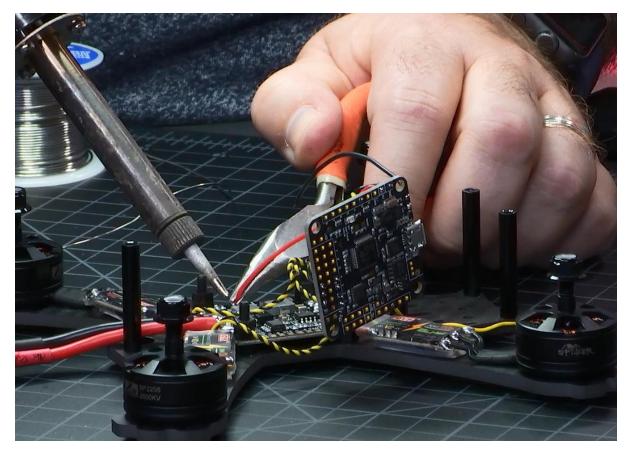
Trim electronic speed controller wires.



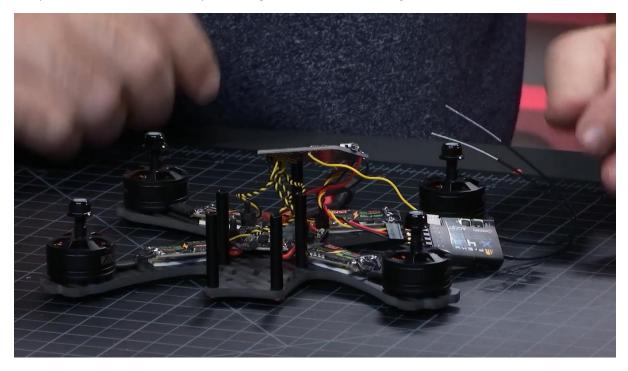
Attach wires to the board from each electronic speed controller.



Solder cable for power from battery to the power board.

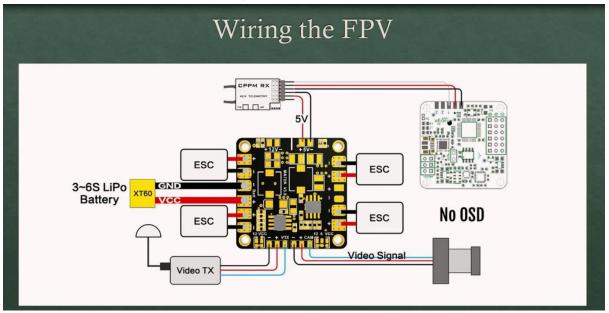


Get power to the dodo board by soldering wires from it to the flight controller.

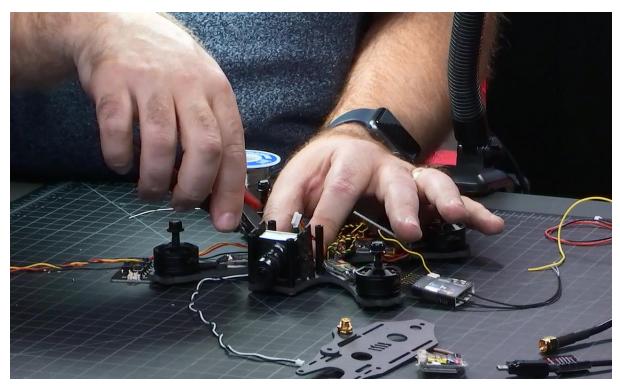


Attach the receiver.

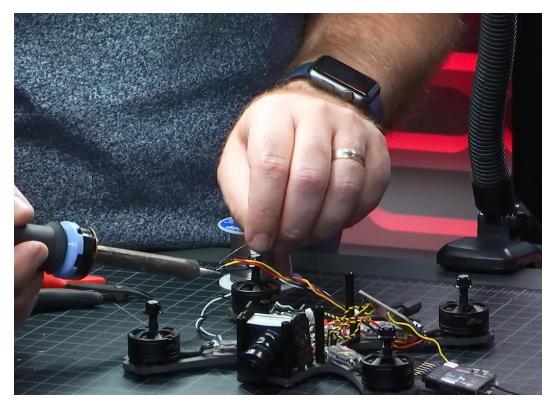
FPV Gear and Final Assembly



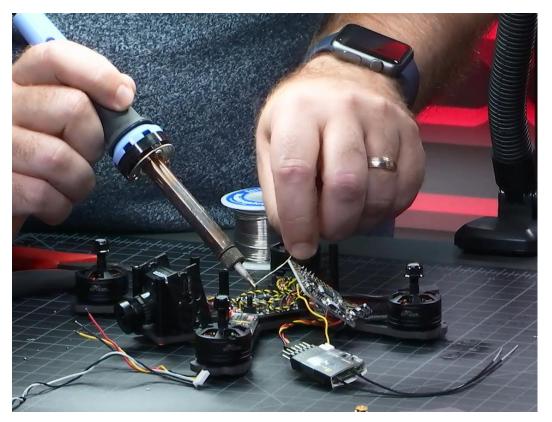
You get to select what voltage you want going to the camera and what voltage you want going to the transmitter. You put solder between two pads. Whichever two you select is the voltage that device is going to get.



Cut the three wires and strip them.



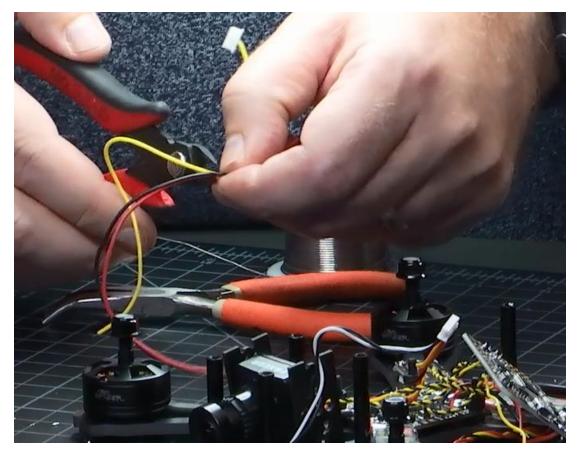
Put solder on all the wires.



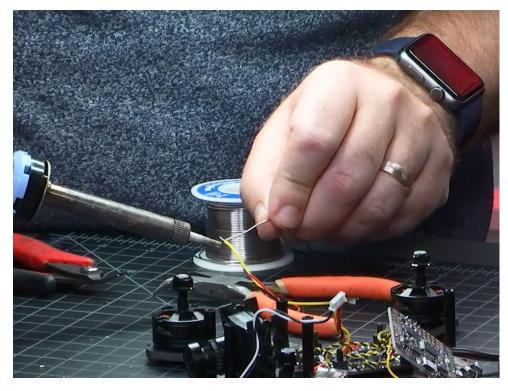
Add solder to the correct pads.



Attach the wires using solder.



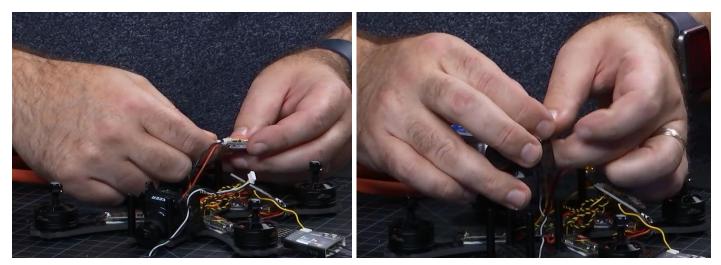
Cut the wires for the video transmitter and strip them.



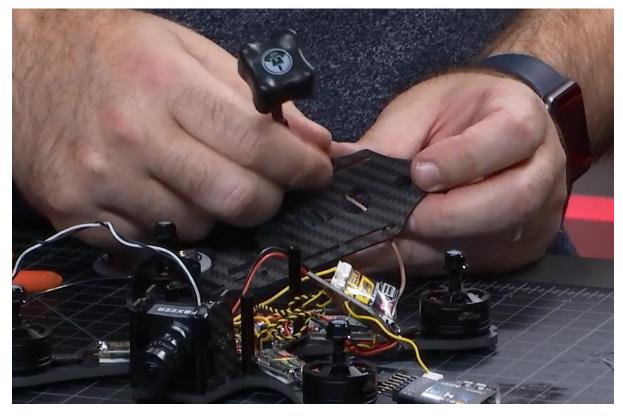
Put solder on the ends of the wires. This is called "tinning".



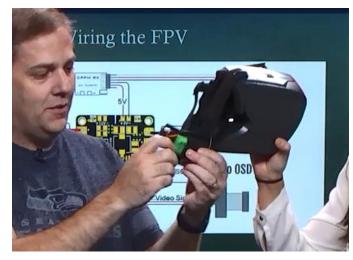
Attach wires using solder.

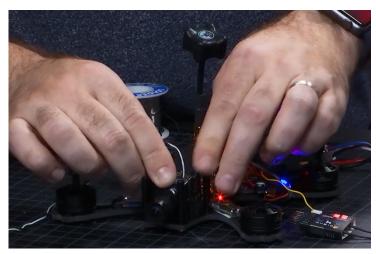


Hook up everything for testing.



Attach antenna to top plate.



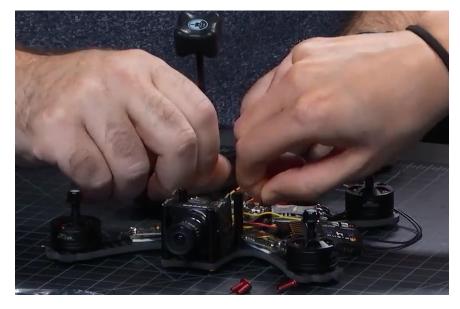


Switch on the goggles and power everything on.

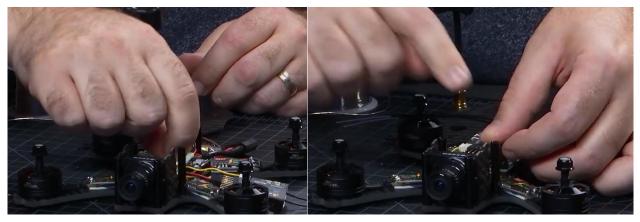




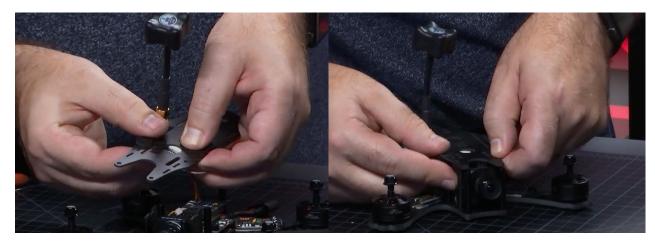
Hit scan button on the goggles and wait until it shows the camera view.



Screw parts together.



Use double sided tape to stick down the transmitters receiver.



Stick video transmitter under the top plate using double sided tape, and line everything up.



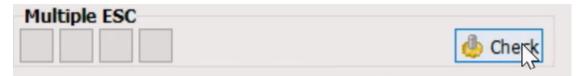
Screw in the top plate. You have finished putting together the main parts of the drone.

BLHeli is a program used to program the firmware for the electronic speed converters. The electronic speed converters have their own firmware.

BLHeliSu	uite 16.4.14.8	3.0.1 [1wire,	/4way @COM4]				-	- 🗆	×
ES <u>C</u> setup	ESC tools	Select ATM	MEL / SILABS Interface	Options	? <u>B</u> LHeli info	Save Screenshot			
A SILA	BS C2 (Tools	tick)		faces					
B SILA	BS C2 (4way	-if)			Mine				
C SILA	BS BLHeli Bo	otloader (U	SB/Com)		Misc Rearming	every Start			
D SILA	BS BLHeli Bo	ootloader (4	way-if)	XX.X	Programm	ing by TX			
E SILA	<u>B</u> S BLHeli Bo	ootloader (C	leanflight)		Motor Direct	ormal	Input Polar	ity Positive	
	IEL BLHeli Bo	ootloader (U	ISB/Com)	>	1 <	>	1 <		>
2 ATM	2 ATMEL BLHeli Bootloader (4way-if)			ection	Demag Comp		Beep Strength		
3 ATM	 4 ATMEL SK Bootloader (ArduinoUSBLinker) 5 ATMEL SK Bootloader (Afro/Turnigy USB Linker) 6 ATMEL BLHeli/SK Bootloader (Cleanflight) 			>	Off Off				
4 ATM				PWM Frequency/Damped Low Control Cont			Beacon Strength 200 200 200 200 200 200 200 20		
5 ATM									
6 ATM									
]									
				>	 	>	 	3	>
Governor	Range High		Brake On Stop		Motor Timing) edium	PPM Min Th	1148	
1 <	nign	>		>	<	>	37 <		>
	Target RP		Motor / Gear Set	цр			PPM Max T		
THR 70 %	% = 6092	rpm	mCP-X v 1	13600		64 81		1832	>
200			Motor @84% Lip	o Motor I	(V Pole Pinion	M-Gear Comp.			
	ead Setup	Write	Setup 🔂 Flash B	.Heli	Flash Other				
Port: COM 4	∨ Baud	: 115200	V Connect						
ESC Data load	ded.								

You need to check to see if the motors are spinning in the correct direction.

Using a USB use BLHeli Connect to the drone through Cleanflight.



Check the electronic speed controllers on the drone.

S <u>C</u> setup	ESC <u>t</u> ools	Select ATM	IEL / SILABS	Interface	Options ?	<u>B</u> LHeli info	Save S	creenshot		
SiLabs ES	C Setup	Motor	s I	Make interfa	aces					
1	2	3	4	5	6	7	8			
1040	1000	1000	1000	0	O	0	0	М		
Calibra	ate ESCs	N		ers will cause vent injury <mark>re</mark>	the motors to move ALL j	propellers be	the second s	his feature. le motor control.		
Contro	ls enabled	l .					Cycle ti	me: 507		
rt: COM 4	✓ Baud	i: 115200	~							
und Multi	ple ESC: ESC	#1 ;ESC#2 ;E	SC#3 ;ESC#4	;						

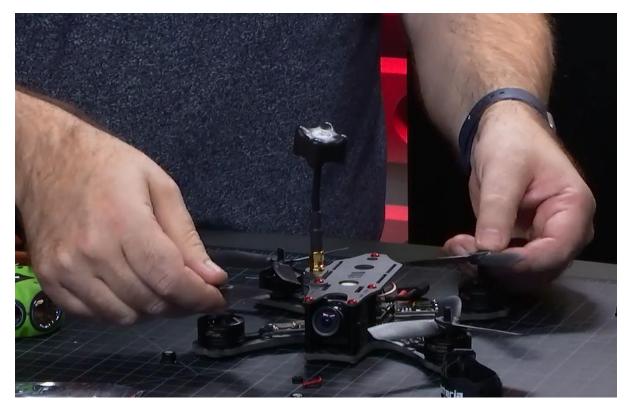
Spin the motors to see which direction they are going.

Moto	or Directio	n	
-	Reve	rsed	
	<	>	0

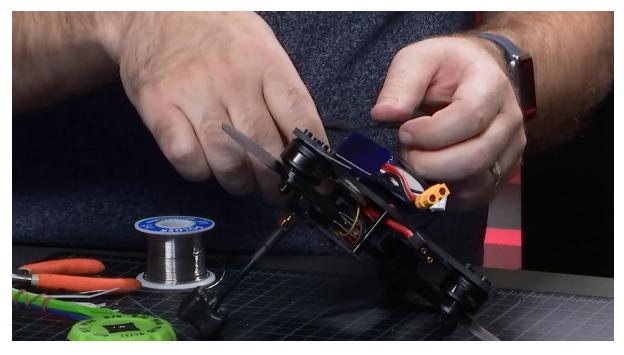
Change Motor Direction to "Reversed" on the motors that need to be changed.

	FLIGHT Image: Second
2016-10-07 @ 15:58:22 EEP	PROM saved Show
🖋 Setup	Modes
🖌 Ports	Modes
🖨 Configuration	Use ranges to define the switches on your transmitter and corresponding mode assignments. A receiver channel that gives a reading between a range min/max will activate the mode. Remember to save your settings using the Save button.
ភ្នំ PID Tuning	to save your settings using the save button.
📥 Receiver	ARM AUX 2 V
🔒 Modes	Min: 1725 Min: 1725 Min: 1720 Min: 1720 <t< td=""></t<>
🛓 Motors	
🖻 CLI	AIR MODE
	Add Range
	ANGLE
	Add Range

Using Betaflight arm the drone in Modes.



Attach the propellers.



Attach the battery using a battery strap.